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**REMARKS****I. INTRODUCTION**

The abstract has been amended. Claims 1, 45, 48 and 49 have been amended. No new matter has been added. Thus, claims 1-49 remain pending in the present application. In view of the above amendments and following remarks, it is respectfully submitted that all of the presently pending claims are allowable.

**II. THE OBJECTION TO THE SPECIFICATION SHOULD BE WITHDRAWN**

The specification of the present application is objected to because the Examiner asserts that the abstract of the specification refers to speculative applications of the invention. (See 07/05/06 Office Action, p. 2, ¶ 2). In order to overcome the Examiner's objection, Applicants amended to specification by deleting from the abstract the sentence: "The method and system for on-screen animation of digital entities according to the present invention can be used for creating animation for movies, for video games, and for simulation." Applicants further amendments to the abstract in order to better define the animation clips. Accordingly, Applicants respectfully submit that the objection to the specification should be withdrawn.

**III. THE 35 U.S.C. § 102(b) REJECTIONS SHOULD BE WITHDRAWN**

Claims 1-3, 7, 15-17, 20-27, 29-32, 34 and 48 stand rejected under 35 U.S.C. § 102(b) as being anticipated by Terzopoulos, D. *et al.* "Artificial fishes: Autonomous locomotion, perception, behaviour, and learning in a simulated physical world", December 1994, Artificial Life, Vol. 1, No. 4, p. 327-351 (hereinafter referred to as "Terzopoulos, D. *et al.*"). (See *Id.*, p. 3, ¶ 5).

Currently amended claim 1 recites, a “method for on-screen animation of digital entities comprising: providing a digital world including image object elements; providing at least one autonomous image entity (AIE); *each said AIE being associated with at least one repeatable AIE animation clip defined by a memorized sequence of images representing a given movement*, said at least one AIE being characterized by a) attributes defining said at least one AIE relatively to said image objects elements, and b) at least one behaviour for modifying at least one of said attributes; said at least one AIE including at least one virtual sensor for gathering data information about at least one of said image object elements or other one of said at least one AIE; initializing said attributes and selecting one of said behaviours for each of said at least one AIE; for each said at least one AIE: using said at least one sensor to gather data information about at least one of said image object elements or other one of said at least one AIE; and using a decision tree for processing said data information resulting in at least one of i) triggering one of said at least one AIE animation clip according to said attributes and selected one of said at least one behaviour, and ii) selecting one of said at least one behaviour.” (Emphasis added).

It is respectfully submitted that while the Terzopoulos, D. *et al.*, describe “a virtual marine world inhabited by realistic artificial fishes”, they fail to describe a repeatable AIE animation clip defined by a memorized sequence of images representing a given movement, as recited in amended claim 1 of the present invention.

In the abstract of Terzopoulos, D. *et al.*, it is recited “an autonomous agent” which has “a three-dimensional body with internal muscle actuators and functional fins, which deforms and locomotes in accordance with biomechanics and hydrodynamic principle”. More specifically, Terzopoulos, D. *et al.* recite in section 3.2, ¶ 1: “The artificial fish moves as a real fish does, by contracting muscles.” Paragraph 2 of the same section recite: “When the fish’s tail

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*beats, it sets in motion a volume of water. The inertia of the displaced water produces a reaction force normal to the fish's body proportional to the volume of water displaced per unit time, which propels the fish forward."* The mechanics and pertaining equations of the fish model are specified in section 3.1. Finally, it is worth quoting part of section 3.4, ¶ 2: *"To simplify the fish model and its numerical solution, we do not simulate the elasticity and dynamics of the pectoral fins. However, we do approximate the dynamic forces that the pectoral fins exert on the body of the fish to control locomotion."*

From the quotations hereinabove, it is obvious that locomotion of the autonomous agents (artificial fishes) is achieved through solving at every time step a system of algebraic equations representing a numerical model of a mechanical and hydrodynamic conditions. More precisely, Terzopoulos, D. *et al.* recite in section 3.1, ¶ 2: *"To integrate the differential equations of motion, we employ a numerically stable, implicit Euler time stepping method. Since the elastic forces depend nonlinearly on the position variables  $x_i$ , the method assembles the sparse stiffness matrix for the spring-mass system in efficient "skyline" storage format, then factorizes and solves the resulting system of algebraic equations at every time step to obtain the position increments."*

In contrast, a motion of an autonomous image entity (AIE) according to the present invention does not involve any computation since such a motion is a linking of repeatable animation clips, an animation clip being a memorized sequence of images representing a given movement.

Thus, Applicants respectfully submit that for at least the reasons stated above, claim 1 of the present application is not anticipated by Terzopoulos, D. *et al.*, and request that the rejection of this claim be withdrawn. As claims 2, 3, 7, 15-17, 20-27, 29-32 and 34 depend from,

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and therefore include all the limitations of claim 1, it is hereby submitted that these claims are also allowable.

The Examiner rejected claim 48 for similar reasons as the rejection of claim 1 as anticipated by Terzopoulos, D. *et al.* (See Id., pp. 13-14, ¶ 27). Claim 48 recites, *inter alia*, "...means to associate to an AIE a) attributes defining said AIE relatively to said image objects elements, b) a behaviour for modifying at least one of said attributes, c) at least one virtual sensor for gathering data information about at least one of said image object elements or other AIEs, and d) *at least one repeatable AIE animation clip, a repeatable AIE animation clip being defined by a memorized sequence of images representing a given movement.*" (Emphasis added). Therefore, Applicants respectfully submit that claim 48 is allowable for at least the reasons discussed above with regard to claim 1.

Claims 1, 5, 6, 7, 13, 18, 45, 46 and 49 stand rejected under 35 U.S.C. § 102(b) as being anticipated by Noser, H. *et al.*, "Navigation for Digital Actors based on Synthetic Vision, Memory and Learning", 1995, Computers & Graphics Vol. 19, No. 1, p.7-19 (hereinafter referred to as "Noser, H. *et al.*"). (See Id., p. 14, ¶ 28).

It is respectfully submitted that the Noser, H. *et al.* is concerned with "*a vision based navigation for digital actors in synthetic worlds*" (See Noser, H. *et al.*, section 5, ¶ 1) and "*problems of path searching*" (See Id., Abstract), and fail to describe a repeatable AIE animation clip defined by a memorized sequence of images representing a given movement, as recited in amended claim 1 of the present invention.

More specifically, and as recited in section 1.3, ¶ 5, Noser, H. *et al.* present "*A global navigation system based on L-systems, and a local navigation system coupled with a walk*

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*motor.*” As stated in section 3.6, ¶ 1, Noser, H. *et al.* concern the implementation of a vision module in an independent animation software.

In contrast, claim 1 of the present invention concerns on-screen animation, and not just a vision-based navigation system for a digital actor. Thus, Applicants respectfully submit that for at least the reasons stated above, claim 1 of the present application is not anticipated by Noser, H. *et al.*, and request that the rejection of this claim be withdrawn. As claims 5, 6, 7, 13 and 18 depend from, and therefore include all the limitations of claim 1, it is hereby submitted that these claims also allowable.

The Examiner rejected claim 45 for similar reasons as the rejection of claim 1 as anticipated by Noser, H. *et al.* (See 07/05/06 Office Action, pp. 19-21, ¶ 36). Claim 45 recites, *inter alia*, “...an art package to create a digital world including image object elements and at least one autonomous image entity (AIE) *and to create repeatable AIE animation clips, a repeatable AIE animation clip being defined by a memorized sequence of images representing a given movement...*” (Emphasis added). Therefore, Applicants respectfully submit that claim 45 is allowable for at least the reasons discussed above with regard to claim 1. As claim 46 depends from, and therefore includes all the limitations of claim 45, it is hereby submitted that claim 46 is also allowable.

The Examiner rejected claim 49 for similar reasons as the rejection of claim 1 as anticipated by Noser, H. *et al.* (See *Id.*, pp. 19-21, ¶ 36). Claim 49 recites, *inter alia*, “...means for providing at least one autonomous image entity (AIE); *each said AIE being associated with at least one repeatable AIE animation clip defined by a memorized sequence of images representing a given movement*, said at least one AIE being characterized by a) attributes defining said at least one AIE relatively to said image objects elements, and b) at least one

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behaviour for modifying at least one of said attributes; said at least one AIE including at least one virtual sensor for gathering data information about at least one of said image object elements or other one of said at least one AIE..." (Emphasis added). Therefore, Applicants respectfully submit that claim 49 is allowable for at least the reasons discussed above with regard to claim 1.

### III. THE 35 U.S.C. § 103(a) REJECTIONS SHOULD BE WITHDRAWN

Claims 4, 8, 9-12, 14, 19, 28, 33, 35-44 and 47 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over either Terzopoulos, D. *et al.* or Noser, H. *et al.* in view of either U.S. Patent No. 6,144,385, U.S. Patent Application Publication No. 2004/0036711, U.S. Patent Application Publication No. 2002/0060685, U.S. Patent No. 6,115,053, U.S. Patent No. 7,002,583, U.S. Patent No. 6,141,019, U.S. Patent No. 6,011,562, U.S. Patent No. 6,208,357 or U.S. Patent No. 5,710,894. (*See Id.*, pp. 24-38, ¶¶ 43, 46, 49, 52, 55, 61, 64, 67, 70, 74, and 86).

Each of the claims rejected by the Examiner under 35 U.S.C. 103(a) depends directly or indirectly on either independent claim 1 or independent claim 45. As discussed above, neither Terzopoulos, D. *et al.* nor Noser, H. *et al.* teach or suggest all the limitations of currently amended independent claims 1 and 45. It is respectfully submitted that the additional references cited by the Examiner are insufficient to cure the deficiencies of either Terzopoulos, D. *et al.* or Noser, H. *et al.* with respect to independent claims 1 and 45. Accordingly, it is further respectfully submitted that Terzopoulos, D. *et al.* or Noser, H. on the one hand, and either U.S. Patent No. 6,144,385, U.S. Patent Application Publication 2004/0036711, U.S. Patent Application Publication 2002/0060685, U.S. Patent No. 6,115,053, U.S. Patent No. 7,002,583, U.S. Patent No. 6,141,019, U.S. Patent No. 6,011,562, U.S. Patent No. 6,208,357 or U.S. Patent No. 5,710,894 on the other hand, taken separately or in combination, does not render the present

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invention obvious, as neither of these documents or combinations of documents would lead directly and without difficulty one of ordinary skill in the art to the present invention. As claims 4, 8, 9-12, 14, 19, 28, 33 and 35-44 depend from, and therefore include all the limitations of currently amended claim 1, it is hereby submitted that these claims are also allowable. As claim 47 depends from, and therefore includes all the limitations of currently claim 45, it is hereby submitted that claim 47 is also allowable.

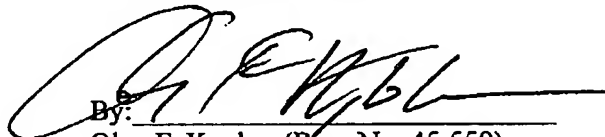
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**CONCLUSION**

In light of the foregoing, Applicants respectfully submit that all of the pending claims are in condition for allowance. All issues raised by the Examiner having been addressed. An early and favorable action on the merits is earnestly solicited.

Respectfully submitted,

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